

### ABSTRACT OF THE DISCLOSURE

The present invention concerns an interference microscope and a method for operating an interference microscope, in particular a  $4\pi$  microscope, standing wave field microscope, or  $I^2M$ ,  $I^3M$ , or  $I^5M$  microscope, at least one specimen support unit associated with the specimen being provided. For determination of the phase position of the interfering light in the specimen region, on the basis of which the interference microscope can be aligned, the interference microscope is characterized in that for determination of the illumination state in the specimen region of the interference microscope, at least one planar area of the specimen support unit is configured to be detectable by light microscopy.

(FIG. 4)